

# Claims:

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1. **A sheet metal lid** for closing a can body, the lid comprising a panel (panel portion, 10) and a seamable edge (12) surrounding said panel, said edge being suitable for attaching to the can body;

wherein an openable area is defined **on said panel** (10) by a weakening line (16), and a tab (30;31,32,33) is disposed on a mounting place (11) outside said openable area (17);

wherein **said tab** (30) has a grip portion (32), an opening portion (33), and an attaching portion (31), said attaching portion being provided for attaching the tab substantially parallel with respect to the panel (10), and wherein said tab (30) as attached is disposed with its opening portion (33) above said openable area (17); **wherein** near to at least one edge (31c) of said attaching portion (31), at least one strip-shaped projection (21a,21b;20) is shaped to protrude out of said panel (10), for limiting a pivoting movement ( $\alpha$ , alpha) of said tab (30) around said mounting place (11).
2. **A sheet metal lid** for closing a can body, the lid comprising a panel (panel portion, 10) and a seamable edge (12) surrounding said panel, said edge being suitable for attaching to the can body;

wherein an openable area is defined **on said panel** (10) by a weakening line (16), and a tab (30;31,32,33) is disposed on a mounting place (11) outside said openable area (17);

wherein **said tab** (30) has a grip portion (32), an opening portion (33), and an attaching portion (31), said attaching portion being provided for attaching the tab substantially parallel with respect to the panel (10), and wherein said tab (30) as attached is disposed with its opening portion (33) above said openable area (17); **wherein** outside said attaching portion (31) at least one projection (21a,21b; 20;22;24) is provided at said panel (10) for blocking a substantial pivoting movement ( $\alpha$ ) of said tab (30) in a plane parallel to said panel.

3. **A sheet metal lid** for closing a can body, the lid comprising a panel (panel portion, 10) and a seamable edge (12) surrounding said panel, said edge being suitable for attaching to the can body;

wherein an openable area is defined **on said panel** (10) by a weakening line (16),  
 5 and a tab (30;31,32,33) is disposed on a mounting place (11) outside said openable area (17);

wherein **said tab** (30) has a grip portion (32), an opening portion (33), and an attaching portion (31), said attaching portion being provided for attaching the tab substantially parallel with respect to the panel (10), and wherein said tab (30) as  
 10 attached is disposed with its opening portion (33) above said openable area (17);  
**wherein** the attaching portion (31) has a surface or planar extension that is smaller than an extension of the tab (30), and at least one blocking means (20;24a;23a, 23b;22) is arranged outside said extension of the attaching portion, for defining or limiting a maximum possible pivoting movement ( $\alpha$ ) of said tab (30).

4. **A sheet metal lid** for closing a can body, the lid comprising a panel (panel portion, 10) and a seamable edge (12) surrounding said panel, said edge being suitable for attaching to the can body;

wherein an openable area is defined **on said panel** (10) by a weakening line (16),  
 20 and a tab (30;31,32,33) is disposed on a mounting place (11) outside said openable area (17);

wherein **said tab** (30) has a grip portion (32), an opening portion (33), and an attaching portion (31), said attaching portion being provided for attaching the tab substantially parallel with respect to the panel (10), and wherein said tab (30) as  
 25 attached is disposed with its opening portion (33) above said openable area (17);  
**wherein** at least one projection (20;21a,21b;23a,24a) is shaped to protrude out of said panel (10) for limiting or blocking a pivoting of said tab (30) by contacting at least one outer edge (31c,31a,31b) of said attaching portion (31).

5. The sheet metal lid according to one of the preceding claims, wherein said projection (20,22) extends over at least 30 %, preferably over at least 50 % of a width (b) or a length (l) of the attaching portion (31).

6. The sheet metal lid according to one of the preceding claims, wherein several  
 35 projections (20,22,23a,23b,24) are provided near said edge (31a,31b,31c) of the attaching portion (31).

7. Sheet metal lid according to claim 6, wherein at least one (20,21a,21b,22) of said several projections has one of line and strip shape.
8. Sheet metal lid according to claim 6, wherein at least one of said several projections has a round to oval shape (22,24a,23b).
9. Sheet metal lid according to claim 7, wherein several strip-shaped projections (20,21a,21b) are provided, two projections of which are not equally aligned (20,21a;20,21b).
10. Sheet metal lid according to one of the preceding claims, wherein the blocking or limiting of a pivoting movement ( $\alpha$ ) of the tab in a plane substantially parallel with respect to the panel (10) is obtained by a contacting at said at least one projection (20).
11. Sheet metal lid according to one of the preceding claims, wherein said projection is disposed between the grip portion (32) and the opening portion (33) of the tab on the panel (10).
12. Sheet metal lid according to one of the preceding claims, wherein the attaching portion (31) is substantially rectangular, particularly square in shape, and has at least three outer edge portions (31a,31b,31c).
13. Sheet metal lid according to one of the preceding claims, wherein the attaching portion is connected to the rest of the tab (30) via an articulation line (38), so that the opening portion (33) is tiltable substantially vertically to a plane of the panel (10) when actuating the grip portion (32).
14. Sheet metal lid according to claim 13, wherein the tilting movement (as a vertical pivoting) causes an opening of the openable area (17) along the weakening line (16).
15. Sheet metal lid according to one of the preceding claims, wherein the pivoting blockage or limitation is maintained also when vertically tilting the tab (30).

16. Sheet metal lid according to one of claims 6 and 9, wherein said several projections are disposed such that when horizontally pivoting the tab (30) each of said projections engages in a different of said several outer edge portions (31a,31b,31c) of the attaching portion.
17. Sheet metal lid according to one of the preceding claims, wherein said at least one projection (20) has a cross section which is shaped asymmetrically (20",21a') particularly in a direction transverse to its longitudinal extension (100).
18. Sheet metal lid according to claim 17, wherein said asymmetrical shape comprises one steeper and one less steep flank or side (21b',21b";20a,20b) not extending parallel to each other.
19. Sheet metal lid according to claim 18, wherein said steeper flank (21b',20a) is located closer to an associated outer edge portion (31b,31a,31c) of the attaching portion than said less steep flank of the same projection.
20. Sheet metal lid according to one of the preceding claims, wherein said at least one projection (20;21a,21b) has a **height (h)** that is larger than 300µm, measured from a top side facing outwards (public side) of the panel (10) around said projection.
21. Sheet metal lid according to claim 20, wherein said height (h) is substantially adapted to a height or thickness of the sheet metal of the attaching portion (31), for achieving a blocking or limitation of a pivoting movement of the attaching portion (31).
22. Sheet metal lid according to claim 21, wherein said height (h) of said at least one projection (20;21a,21b) is **not less than** substantially the thickness of the sheet metal at the respective outer edge portion (31a,31b,31c) of the attaching portion (31).
23. Sheet metal lid according to one of the preceding claims, wherein said at least one projection is shaped by an initial shaping or pre-forming (Fig. 1) from said panel (10) and obtains its final shape by a **reshaping** (reforming), particularly during reforming a reduction in the thickness of a top side (20c) of the projection (20) being effected.

24. Sheet metal lid according to claim 23, wherein one of two longer flanks (21b',21b'') of the projection is or was shaped more steeply in a reforming process (Fig. 2).
25. Sheet metal lid according to one of the preceding claims, wherein said at least one projection (20) is located in a peripheral area (11b) of the rivet base zone (11a) in the sheet metal lid, said rivet base zone being visible from the inside.
26. Sheet metal lid according to claim 25, wherein a part of the projection (20) is located outside the rivet base zone (11a).
27. Sheet metal lid according to claim 26, wherein more than 40 % of a surface area (f20) of said at least one projection is located **outside** the rivet base zone (11a).
28. Sheet metal lid according to one of claims 26 and 27, wherein the rivet base zone (11a) extends as a mounting place annularly about the rivet (11), which is visible from the inside (product side).
29. Sheet metal lid according to one of claims 25 and 28, wherein the projection is located in the manner of a secant to tangent as a strip or line in the edge portion (11b) of the rivet base zone.

30. **Sheet metal lid** for attaching a tab (30) and for subsequently closing a can body, comprising a panel as a panel portion (10) and a seamable edge (12) surrounding said panel, said edge being suitable for attaching to the can body; wherein an opening area is defined on said panel (10) by a weakening line (16), and a tab (30;31,32,33) is attachable on a mounting place (11) at said panel; **wherein** at least one projection (20;21a,21b;23a,24a) is shaped to protrude out of said panel (10) for at least limiting, particularly substantially completely blocking, a pivoting of said tab, by contacting at least one outer edge portion (31c,31a,31b) of said attaching portion (31).
31. **Sheet metal lid** for attaching a tab (30) and for subsequently closing a can body, comprising a panel (10) and a seamable edge (12) surrounding said panel, said edge being suitable for attaching to the can body; wherein an opening area is defined on said panel (10) by a weakening line (16), and a tab (30;31,32,33) is attachable on a mounting place (11); **wherein** at least one projection (20,21a,22,23a,24a) is arranged near a mounting place (11), but at a distance with respect thereto, and the distance of said projection corresponds at least to a distance of an outer edge (31a,31b,31c) of an attaching portion of the tab from the mounting place (11), after mounting the attaching portion (31).
32. Sheet metal lid according to claim 31, wherein the outer edge is an edge line (31a) facing away from the attaching portion (31), and wherein at least two edge lines limit a surface extension of the attaching portion.
33. Sheet metal lid according to claim 32, wherein said at least two edge line portions have a substantially straight-lined extension.
34. Sheet metal lid according to at least two of claims 1 to 4.

35. **Method** for shaping a sheet metal lid according to one of the preceding claims, wherein at least one projection (20,21a,21b) is shaped twice, once for shaping a pre-form (20\*) of the projection out of a panel (10), said pre-form being located near an attaching portion (31) of a tab (30), but at a distance from a mounting place (11), and once for re-forming a front edge (20'',21b') of said at least one projection, for obtaining a better blocking for an associated outer edge portion (31c) of the attaching portion.
36. Sheet metal lid according to claim 5, wherein the projection has a length of more than 80 % of the width (b) of the attaching portion.
37. Sheet metal lid according to one of claims 1 to 4, wherein several projections are located near several edges as edge portions (31a,31b,31c) of the attaching portion (31).
38. Sheet metal lid according to one of claims 9 and 6, wherein at least one projection (21a,21b) is extends in a longitudinal direction of the tab (30) and has a length that is not more than 50 % of a longitudinal extension (l) of the attaching portion (31), particularly in combination with a distance of the outermost end of said projection (21a,21b) from the centre of the mounting place (11) of more than 50 % of the longitudinal extension (l) of the attaching portion (31).
39. Sheet metal lid according to one of claims 9 and 6, wherein three projections (21a,21b,20) are provided, two of which extend substantially parallel to the longitudinal axis (100) of the tab and one (20) extends substantially perpendicularly to said axis.

40. A lid made from sheet metal, having a panel portion (10) and provided for receiving a tab (30), which is to be attached to said panel portion (10) through a substantially flat attaching portion (31), and having a mounting means (11), such as an integrally formed rivet (11), said panel (10) having at least one projection (20,21a,21b,23a,24,22), extending upwards from the panel portion (10) and providing a front stop edge (21b',21a',20") for at least limiting a horizontal rotation ( $\alpha$ ) of said tab (30) as a whole.
41. Lid according to claim 40, wherein said front stop edge (20") is linear.
42. Lid according to claim 40, wherein said front stop edge extends over more than half of a width or at least 30 % of the length (l) of the flat attaching portion (31).
43. Lid according to claim 40, wherein said front stop edge (20",20a) is substantially perpendicular to a longitudinal plane (100) extending along the length of the tab (30).
44. Lid according to claim 40, wherein said projection (20,21a,21b) is formed at least twice, firstly to form a front stop zone from a portion of the panel (10), and secondly to re-shape said stop zone into or to a shape which as stop edge (20") is steeper or sharper than the stop zone shaped previously.
45. Lid according to claim 40, wherein two stop edges are provided substantially parallel to a longitudinal plane (100) extending along the length of the tab (30).
46. Lid according to claim 40, wherein the projection from the panel is shaped in an area corresponding to a periphery of the rivet base portion or embossed portion (11a) around said mounting place (11).
47. Sheet metal lid according to one of claims 17, 18, 30, 31 and 40, wherein said at least one projection 20 is flattened on a top side (20c) thereof, particularly the wall thickness thereof also being reduced.
48. Sheet metal lid according to claim 47, wherein said reduction is provided by an embossing operation.



49. Sheet metal lid according to claim 47, wherein the steeper edge (21a',21b,20") comprises at least one portion extending at an angle of substantially 90° with respect to the panel (10).
50. Sheet metal lid according to one of claims 1 to 4, 30, and 31, wherein said projection or stop edge has a greater width than height (h) and a considerably greater length than width.
51. Method according to claim 35, wherein a score line (16) is shaped into the panel (10) after shaping the pre-form (20\*) of said at least one projection (20).
52. Method according to claim 35, wherein the re-forming comprises an embossing by which a top side (20c) of said projection (20) is flattened and stiffened.
53. Method according to claim 52, wherein said stiffening is a reduction of the sheet metal thickness by at least 10 %.

